

IN THE SPECIFICATION

Please amend the Specification as follows:

On page 1 of the specification, please amend the paragraph beginning on line 1 to the following:

The present invention generally relates to ~~a method of recording information on a disc-shaped recording medium of the type having a multitude of substantially circular concentric recording tracks.~~ Embodiments disclosed herein have Such recording tracks that may take the form of individual circular tracks or of one continuous spiral track. Tracks can be ~~Each track is~~ divided into logic blocks ~~and with each block has~~ having a data area for the recording of data. Additional embodiments provide for ~~Furthermore, each block to potentially have usually has~~ an area reserved for the recording of a check number or "check sum".

On page 2 of the specification, please amend the paragraph beginning on line 18 to the following:

Various embodiments relate to methods ~~The present invention more particularly relates to a method of acquiring the information for specifying the defect locations.~~ Until now it is customary to acquire said information by recording dummy data on the recording disc during a test session and to read out the recorded dummy data and subsequently compare said data with the source data. It is then customary to examine all the blocks of all the recording tracks on the recording disc in this manner. This has been described clearly in, for example, EP-A 0 798 716; ~~from which the preamble of Claim 1 is known.~~ However, such a method has the drawback that it takes much time. This is a drawback particularly in the case of, for example, a video recorder, since a user may expect that a video recorder is ready for recording fairly rapidly after insertion of a new disc.

On page 2 of the specification, please amend the paragraph beginning on line 28 to the following:

It is an ~~a major~~ object of an embodiment ~~the invention~~ to provide a more efficient method of testing a recording disc for defects.

On page 2 of the specification, please amend the paragraph beginning on line 30 to the following:

An embodiment ~~The present invention~~ proposes a method which is particularly useful in recording systems which intrinsically include a very powerful error correction. Such a recording system is, for example, DVR (Digital Video Recording), which system is known per se and will not be described in more detail here. It is to be noted merely that in DVR a recording layer of a disc is disposed at a comparatively short distance (approximately 0.1 mm) from the disc surface. A laser beam used for writing/reading then has a focus which is situated fairly close to the disc surface which faces the laser source, as a result of which the laser spot formed on this surface is comparatively small. The system is therefore comparatively susceptible to slight disruptions of the disc surface.

On page 3 of the specification, please amend the paragraph beginning on line 16 to the following:

~~It Therefore, it is~~ an a-particular object of another embodiment ~~the present invention~~ to provide an efficient method of testing a disc-shaped recording medium, in which defect areas whose physical dimensions are larger than a predetermined threshold size are identified comparatively rapidly while defect areas whose physical dimensions are below said threshold can be ignored.

On page 3 of the specification, please amend the paragraph beginning on line 21 to the following:

Another embodiment ~~The present invention~~ advantageously utilizes the fact that a spot defect whose dimension in the longitudinal direction of recording track (tangential dimension) is so large that the resulting recording error cannot be corrected by the error correction system and further has such a large dimension in the transverse direction of the recording tracks (radial dimension) that the spot defect extends over many adjacent recording tracks, and ~~the present invention~~ is based on the recognition of the fact that it is then not necessary examine all the recording tracks individually but that it suffices to examine only a few recording tracks, referred to as test tracks, which are spaced at a comparatively large distance

from one another. There is always an area with a comparatively large number of non-examined recording tracks situated between the individual test tracks which have been examined. If during such an examination process no defect is found, this does not mean that the examined disc does not have any defects at all but it will be obvious that a possible defect will then always have a radial dimension smaller than said number of non-examined recording tracks situated between two adjacent test tracks, and that the tangential dimension of such spot defect which is yet present will also be small enough.

On page 4 of the specification, please amend the paragraph beginning on line 3 to the following:

Another embodiment ~~The present invention~~ further proposes to examine the direct proximity of the test track more closely if a test track is found to exhibit a defect, in order to determine the size of the defect. This can be effected prior to recording but preferably this is effected after the recording, and a suspect area at opposite sides of the test track which is found to be defective is skipped during recording.

On page 4 of the specification, please amend the paragraph beginning on line 8 to the following:

In ~~Thus, in~~ accordance with another embodiment, ~~the present invention~~ an acceptable compromise is reached between a comparatively short test time and the reliability of the test.

On page 4 of the specification, please amend the paragraph beginning on line 15 to the following:

It is an ~~a further~~ object of another embodiment ~~the present invention~~ to overcome these problems as well. To this end, it is proposed by ~~the present invention~~ to examine a recording track of a recording disc on the basis of the tracking signal. For this purpose, the relevant track on the recording disc is simply followed by a laser beam without information being written into said track or without information being read from said track. If the recording disc has a defect the tracking signal will exhibit identifiable deviations or errors or will even be lost completely. This can be detected in a fairly simple manner. The defect criterion proposed by

~~the present invention~~ is that the absolute value of the tracking signal exceeds a predetermined threshold level for a predetermined time or longer.

On page 4 of the specification, please amend the paragraph beginning on line 24 to the following:

~~A major advantage of this~~ test method proposed by another embodiment ~~the present invention~~ is that no write operation is effected and that the test can be performed very rapidly.

On page 4 of the specification, please amend the paragraph beginning on line 26 to the following:

These and other aspects, features and advantages of various embodiments ~~the present invention~~ will be elucidated further by means of the following description of a ~~preferred~~ form of a test method in accordance with embodiments ~~the invention~~ with reference to the drawings, in which:

On page 5 of the specification, please amend the paragraph beginning on line 2 to the following:

Figure 1 is a diagrammatic plan view of a part of a disc-shaped recording medium 1, for example and in particular an optical recording disc for use in DVR. The disc 1 has a multitude of pre-defined substantially circular recording tracks 2. To illustrate ~~the present invention~~ an embodiment, the recording disc 1 in Figure 1 is shown with three disc defects 11, 12 and 13 in the form of spots. The radial and tangential dimensions of each spot defect are of the same order of magnitude, the spot defects 11, 12 and 13 being represented as substantially circular spots in Figure 1.

On page 5 of the specification, please amend the paragraph beginning on line 20 to the following:

In a conventional manner each recording track 2 is tested by writing and reading data, which is very time-consuming. According to ~~the present invention~~ another embodiment, it is proposed to examine only a limited number of recording tracks of the disc 1, the tracks to be

examined ~~being~~ referred to hereinafter as "test tracks 2T". Figure 1 shows some of these test tracks as comparatively bold lines referenced 2T1, 2T2 etc. Successive test tracks 2T are spaced apart by a predetermined number N of recording tracks. Hereinafter it is assumed by way of example that N is 50. However, it will be evident to one skilled in the art that N may have any other suitably selected value.

On page 5 of the specification, please amend the paragraph beginning on line 28 to the following:

Figure 2 diagrammatically illustrates a recording device 20 for recording information such as real-time video signals on a recording disc 1, in which recording device 20 ~~the present invention~~ is embodied. The recording device 20, which will also be referred to as "video recorder", has a write/read unit 21 adapted to record information on and to read information from the recording disc 1 under control of a control unit 22. As it is basically possible to use a standard write/read unit for this purpose, this unit will not be described in further detail. It is to be noted merely that the control unit 22 can give commands to the write/read unit 21 via a command line 23, for example the command to carry out a write or read operation and the sequence number of the relevant recording track 2 to which the write or read operation relates.

On page 6 of the specification, please amend the paragraph beginning on line 23 to the following:

In another embodiment ~~the scope of the present invention~~ it is assumed in general that a track has a satisfactory integrity if there are no disturbances in the tracking signal over the full length (one full revolution) of a track, or if they appear at the most in a small enough portion of the track; this will be referred to as a "correct track" or "track OK". However, if the tracking signal contains one or more disturbances over a too large part of the track, this will be referred to as "failing track". The lack of track integrity or the track failure, will be regarded as an indication of the presence of a surface defect which affects at least a part of the relevant track. Thus, the tracking signal S is indicative of the presence of a surface defect without a time-consuming write/read/compare cycle being required.

On page 8 of the specification, please amend the paragraph beginning on line 26 to the following:

The recording device 20 is now ready to record information (video signals) on the disc 1. The write process will be substantially identical to a standard write process, with the proviso that the control unit 22 is adapted to read out the defect list in the memory 25 during writing and to skip the recording tracks listed therein. It will be evident that it is thus also possible to record a very rapid information stream, for example a real-time digital video signal, continuously without being troubled by possible spot defects: in the case of comparatively small spot defects the error correction system is activated to correct any errors and in the case of comparatively large spot defects the affected tracks are simply skipped. Moreover, it will be evident that the method of testing the recording tracks of the recording disc, as proposed in accordance with this embodiment ~~the present invention~~, requires a comparatively small amount of time.

On page 9 of the specification, please amend the paragraph beginning on line 3 to the following:

The test method proposed by another embodiment ~~the present invention~~ for testing the recording tracks of the recording disc may be carried out each time when a new disc 1 is loaded into the apparatus 20. However, it is alternatively possible for the control unit 22 to be adapted to record the defect list on the disc just tested. In that case the control unit 22 may be adapted to check first of all, each time that a new disc 1 is loaded into the apparatus 20, whether already a defect list has been recorded on this disc and, if this is the case, to load it into the memory 25.

On page 9 of the specification, please amend the paragraph beginning on line 21 to the following:

As already stated, the integrity of the track being examined is determined on the basis of the received tracking signal in the step 103. Although a variety of criteria are conceivable, the present invention proposes a criterion which, on the one hand, can be implemented comparatively simply and, on the other hand, yields a satisfactory reliability. For the criterion proposed by another embodiment ~~the present invention~~ it is assumed that under

normal conditions the tracking signal as a rule does not deviate much from the nominal value which corresponds to the center of the track being examined and that any significant deviations will have only a short duration. Thus, in accordance with this embodiment ~~the present invention~~ it is assumed that the track being examined is defective when it is found that a tracking signal, which is indicative of a significant deviation with respect to the center of the track, has an impermissibly long duration.

On page 10 of the specification, please amend the paragraph beginning on line 4 to the following:

Under normal conditions said value will appear more briefly as the tracking error parameter is greater. In accordance with a the preferred ~~the preferred~~ criterion proposed by another embodiment, ~~the present invention~~ the track being tested is considered to be defective if the tracking error parameter is greater than 0.5 for a length of time of 60 μ s or longer.

On page 10 of the specification, please amend the paragraph beginning on line 8 to the following:

Figure 4 shows a flow chart of another variant of the test method in accordance with another embodiment ~~the present invention~~, ~~which is to be preferred over the method described with reference to Figure 3~~. Identical reference numerals refer to identical or similar steps, which will therefore not be described extensively.

On page 10 of the specification, please amend the paragraph beginning on line 24 to the following:

Although, as explained, a distinction can be made between the test tracks already examined and suspect tracks not yet examined and there may be two different lists, whose contents are treated differently, ~~it is preferred that~~, for the sake of simplicity, the two lists are combined to a single list. In other words: ~~preferably~~ both the test tracks already examined and the suspect tracks not yet examined are stored in one list, which will be referred to as the "alarm list".

On page 11 of the specification, please amend the paragraph beginning on line 5 to the following:

After the step 105 the video recorder is ready to record information (video signals) on the disc 1 in a step 106. The write process will be substantially identical to a standard write process, with the provision ~~provis~~ that the control unit 22 is adapted to read out the alarm list (and, if applicable the primary defect list) in the memory 25 during writing, and to skip the recording tracks appearing in said list(s). It will be evident that it is thus also possible to record a very rapid information stream, for example a real-time digital video signal, continuously without being troubled by possible spot defects. For non-detected spot defects, which are comparatively small by definition, the error correction system is activated to correct possible errors. For spot defects that have been detected the affected tracks and the suspect tracks in the vicinity are simply skipped. Furthermore, it will be evident that the method of testing the recording tracks of the recording disc, ~~as proposed by the present invention,~~ takes comparatively little time.

On page 11 of the specification, please amend the paragraph beginning on line 17 to the following:

~~Thus, in~~ In another embodiment ~~the proposed method,~~ not only tracks which are affected by a comparatively large spot defects 13 are skipped but also tracks which are affected only slightly by a comparatively small spot defects or which are not affected at all are skipped. After completion of the recording in the step 106, when the video recorder 20 need not be immediately ready for further commands from the user, the video recorder 20 has time to examine individual suspect tracks of the alarm list more closely in order to detect the dimensions of the spot defects for each of the test tracks specified in the primary defect list. The procedure then followed may be identical to that described for the steps 110 and 120 of Figure 3. If both the test tracks and the associated suspect tracks have been stored in the alarm list it is also simple to examine all the tracks specified in this alarm list.

On page 12 of the specification, please amend the paragraph beginning on line 8 to the following:

_____ In an alternative variant the step 142 is skipped-, which means that in the step 141 only the defective test tracks are entered in the list referred to as the "primary defect list". The

write process carried out in the step 106 will be substantially identical to a standard write process, with the ~~provide~~ provision that the control unit 22 is adapted to read the primary defect list in the memory 25 during writing and to skip the suspect areas (3T2; 3T3) which correspond to the test tracks (2T2; 2T3) in this list.

On page 12 of the specification, please amend the paragraph beginning on line 14 that was formerly amended on March 11, 2004, to the following:

In a further modification, within another embodiment ~~of the present invention~~ of the control unit 22 is adapted to monitor the tracking signal during the write process in a manner as described hereinbefore and to interrupt write process if the tracking signal is found to be indicative of a tracking error which is so large that an adjacent track is likely to be damaged by the write process. The write interrupt criterion proposed ~~by the present invention~~ is a criterion similar to the criterion for tracking integrity described hereinbefore but now having a higher value for the acceptance threshold. A decision to interrupt the write process is taken more in particular when the tracking error parameter D of the tracking signal is larger than $\frac{2}{3}$ for a length of time that lies in a range approximately between 50 μ s and 70 μ s, and preferably approximately 60 μ s.

On page 12 of the specification, please amend the paragraph beginning on line 23, to the following:

It will be evident to one skilled in the art that the scope of the present invention is not limited to the examples described hereinbefore but that various changes and modifications thereto are possible without departing from the scope of the invention as defined in the appended Claims. For example, in another embodiment ~~the present invention is already advantageous if~~ only predetermined test tracks are examined in the test procedure, even if the test procedure is not based on the use of the tracking signal, ~~although this is preferred.~~

On page 17 of the specification as originally submitted, please amend the Abstract as follows:

ABSTRACT:

A method and a ~~DVR video recorder (20)~~ for recording ~~real time video signals~~ on a ~~DVR disc (1)~~ are described. ~~The disc may exhibit two dimensional spot defects (11; 12; 13) but the DVR error correction system is very powerful and is capable of correcting errors as a result of small spot defects (11; 12).~~ Embodiments include ~~In order to examine in a rapid and efficient manner for whether the disc has large spot defects (13), by testing the integrity of predetermined test tracks (2T) is assessed on the basis of the tracking signal. Further~~ embodiments include when ~~When a defective test track (2T2; 2T3) is found the proximity of said the test track is examined further. If the number of affected tracks appears to be small, recording in these tracks is allowed; if the number of affected tracks appears to be large, these tracks are entered in a defect list, which is preferably recorded on the disc. During recording the tracks appearing in the defect list are skipped.~~

Fig. 1